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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,703	08/06/2001	Takahiro Fuchigami	016907/1246	8140

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EXAMINER	
DIVINE, LUCAS	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/921,703	FUCHIGAMI ET AL.	
	Examiner	Art Unit	
	Lucas Divine	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14,21 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 1 – 12, 14, and 21 – 22 are pending.

Response to Arguments

2. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 – 7, 11, 12, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 6549657) in view of Hirota et al. (US 6631207).

Regarding claims 1 and 21, Ohta teaches **an image processing apparatus** (embodiment 3 as shown in Fig. 8, note comment in col. 9 lines 32-34) **comprising:**

image development means (102) **for generating first image data** (raster-image data; col. 5 lines 9-10) **and first discrimination data** (color green data created by 102 and used for discrimination steps of CPU; col. 10 lines 20-27 – specifically line 26) **representing attributes of each of pixels of the first image data** (col. 5 lines 9-10, wherein raster-image data is created for each pixel; and wherein the green data is an attribute of each pixel) **on the basis of**

information described in a page description language (conversion based on PDL data; col. 5 line 8);

discrimination data generating means (104) **for generating second discrimination data** (icode information as given as an example in Fig. 11; col. 5 lines 12-18) **different from the first discrimination data** (icode different than green pixel data)**, using the first image data** (col. 10 lines 21-22, wherein discrimination corresponds to input raster image) **and the first discrimination data generated by the image development means** (color green data created by 102 and used for discrimination steps of CPU; col. 10 lines 20-27)**;**

image data generating means (image data generating functional blocks 601, 602, 603, 604, 605 as a group act as image generating means) **for generating second image data** (correct CYMK data for printing from RGB as discussed in col. 9 line 35 - col. 10 line 55, for example RGB to CMY then K and select correct CYMK data) **by correcting the first image data generated by the image development means** (selector 605 selects the corrected color image data based icodes [second discrimination data]; col. 10 lines 49-55) **on the basis of the second discrimination data generated by the discrimination data generating means** (icode, col. 10 lines 49-51, also shown in arrow from 105 to 605 in Fig. 8)**;**

image processing means (image processing functional blocks 406, 407, 408, 409, 410 as a group act as image processing means) **for subjecting the second image data generated by the image data generating means** (second image data CYMK enters image processing means after selector unit 605) **to a predetermined process** (process of comparing pixel by pixel to obtain a pulse modulated signal for printing; col. 8 lines 48-62 and col. 10 lines 56-67) **on the**

basis of the second discrimination data generated by the discrimination data generating means (icode, col. 10 line 61 and col. 8 lines 50-54); **and**

image output means for outputting image data processed by the image processing means (printer engine 413).

While Ohta teaches that the image data generating means (601 – 605) including **first image data generated by the image development means is color image data comprising plural color components** (RGB coming out of 103 to be converted to CMYK in 601), Ohta does not specifically teach that **where at least one color component of a pixel of the color image data is associated with a character or a line figure described by a straight line and a curve** to generate **second image data by replacing the first image data other than said color component with data of a peripheral pixel of said pixel and thus correcting the first image data.**

Hirota teaches a selector unit 815 that takes black edge correction quantity from selector 814 and together with 816, 817, and other edge smoothing and enhancement blocks shown in Figs. 22A and 22B (see associated descriptions including areas including col. 18-21) including **where at least one color component of a pixel of the color image data is associated with a character or a line figure described by a straight line and a curve** (e.g. col. 20 lines 23-30, wherein black color image data is associated with a character) to generate **second image data by replacing the first image data other than said color component with data of a peripheral pixel of said pixel and thus correcting the first image data** (e.g. col. 20 lines 23-30, wherein the non-black color components are smoothed for correcting the image data).

Both Hirota and Ohta (in the image data generating means) perform elections and masking and edge work based on lines/characters. It would have been obvious therefore to include the edge enhancement features of Hirota into the image data generating means of Ohta. The motivations for doing would have been to most correctly output character information in image data that includes multiple color coordinates. In fact, Hirota's main motivation for the invention is to improve reproducibility of character edges (col. 1 lines 42-44), which would improve the system of Ohta in character processing.

Examiner note: since the whole patent of Hirota is directed towards image reproduction and edge enhancement, the cited lines and figures are for example only. Applicant is encouraged to review other areas to gain full perspective of Hirota.

Regarding claim 22, the structural elements of claims 21 and 1 perform all of the method steps of method claim 22. Therefore claim 22 is rejected for the reasons set forth in the rejection of claims 21 and 1 above.

Regarding claims 2 and 3, which depend from claim 1, Ohta embodiment 3 teaches that the CPU 104 discriminates whether each pixel is associated with a character, or line figure (Fig. 4 character 302, line 305; col. 10 lines 29 and 52 and previously discussed in previous embodiments).

Ohta embodiment 3 does not specifically teach that the character/line discrimination can be done outside of the CPU 104 (cited as discrimination data generating means for developing icode in claim 1).

Ohta embodiment 4 teaches the character/line discrimination can be done outside of the CPU 104 (Fig. 14, 17, and 27).

It would have been obvious to place the character/line discrimination units outside of the CPU 104 as shown in embodiment 4. The motivation for doing so would have been to have a dedicated circuit for an important task in the system, which would free up the CPU to process other tasks and thus speed up the whole system. It further would have been obvious to combine because Ohta teaches all of the implementations and combining would thus be obvious.

In the combined system, the block 1105 for character/line discrimination and the unit 102 for PDL interpretation would be considered image development means and the first discrimination data would be the TEXT output shown in Figs. 14 and 27 and the CPU 104 would take the input and generate second discrimination data (icode). Thus, the image development means would generate discrimination data based on characters/lines, while the discrimination data generating means would not.

Regarding claim 4, which depends from claim 1, Ohta teaches that **the image development means generates first discrimination data that does not discriminate whether each pixel is associated with a line figure described by a straight line and a curve, or a plane figure, the entirety or each component of which is painted out with uniform density** (the first discrimination data generated by image development means 102 is the green data associated with the pixel, thus the data generated does NOT discriminate whether each pixel is associated with a line figure or plane figure).

Regarding claim 5, which depends from claim 1, Ohta further teaches **the discrimination data generating means generates second discrimination data that discriminates whether each pixel is associated with a line figure described by a straight line and a curve, or a plane figure, the entirety or each component of which is painted out with uniform density**

(col. 10 lines 23-25, wherein a pixel or area is discriminated as to be a part of a line or a grayscale image area – 'continuous grayscale' implying uniform density), **using the first image data generated by the image development means** (col. 10 line 26, wherein the CPU uses this green component discrimination data to discriminate second data).

Regarding claim 6, which depends from claim 1, Ohta further teaches **the image development means generates first discrimination data that does not discriminate between a contour portion and an inside portion of a plane figure painted out with uniform density** (the first discrimination data generated by image development means 102 is the green data associated with the pixel, thus the data generated does NOT discriminate whether each pixel is associated with a contour portion and an inside portion).

Regarding claim 7, which depends from claim 1, Ohta further teaches **the discrimination data generating means generates second discrimination data that discriminates between a contour portion and an inside portion of a plane figure painted out with uniform density** (Fig. 4 shows various pixels that are all discriminated by CPU 104, including the inside portion of a plane figure [301] and the contour portion of a plane [edge 303]), **using the first image data generated by the image development means** (col. 10 line 26, wherein the CPU uses this green component discrimination data to discriminate second data).

Regarding claim 11, which depends from claim 1, Ohta further teaches **the discrimination data generating means generates second discrimination data that discriminates the magnitude of density variation in each pixel** (iemax variable as shown in Fig. 11 and discussed in col. 6 lines 7-21 judges the magnitude of density variation in the pixel to related pixels in order to decide whether or not the pixel is along a line/character area), **using the**

first image data generated by the image development means (col. 10 line 26, wherein the CPU uses this green component discrimination data to discriminate second data).

Regarding claim 12, which depends from claim 1, Ohta teaches **the discrimination data generating means generates, when the first image data generated by the image development means is color image data comprising plural color components** (RGB data as discussed in col. 9 line 38), **second discrimination data which represents attributes of each pixel** (the discrimination shown in Fig. 11 represents the attributes for each particular pixel) **for each color component** (these attributes utilize each color component, see step S12, wherein each component RGB is used to help generate second discrimination data) **and is different from the first discrimination data** (icode information [second] is different than green component information [first]), **using the color image data** (col. 9 line 38).

4. Claims 8 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta and Hirota and as applied to claim 1 above, and further in view of Uekusa et al. (2001/0013953).

Regarding claims 8 – 10, which depend from claim 1, Ohta teaches an image processing system for printing that performs image correction based on plane figure, character and line detections (see discussion of embodiment 3, specifically col. 11 lines 1-10.

Ohta does not specifically teach a system that discriminate between a plane figure and a tone image.

Uekusa teaches an image processing system (by the same assignee as Ohta) for printing including discriminating between a plane figure at and tone image (Figs. 2, 3, 8 and their associated discussions).

It would have been obvious to one of ordinary skill in the art to add a third type of object to look for in the image data, thus the tone image. The motivation for doing so would have been to perform a more proper image process (0011 and 0012) by providing image correction also on tone images. In paragraph 0008, Uekusa discusses further reasons why color correction on tone images is beneficial for producing an excellent printed output and 0005 discusses that characters/lines, graphics, and photographs all need to be corrected differently because of different qualities.

The combination above teaches generating discrimination data between a plane figure and a tone image, but the combination does not specifically teach that the discrimination could take place by the image development means.

Ohta embodiment 4 teaches the discrimination can be done outside of the CPU 104 (Fig. 14, 17, and 27).

It would have been obvious to place the discrimination units outside of the CPU 104 as shown in embodiment 4. The motivation for doing so would have been to have a dedicated circuit for an important task in the system, which would free up the CPU to process other tasks and thus speed up the whole system.

In the combined system, the block 1105 for discrimination and the unit 102 for PDL interpretation would be considered image development means and the first discrimination data would be the type of data output and the CPU 104 would take the input and generate second discrimination data (icode). Thus, the image development means would generate discrimination data based on characters/lines, tone images, and plane figures, while the discrimination data generating means would not.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta and Hirota as applied to claim 1 above, and further in view of Sasanuma (US 5875036).

Regarding claim 14, which depends from claim 1, Ohta teaches that in the image generating means (601, 602, 603, 604, 605 as a group act as image generating means), masking circuits are used to mask the data and select the output based on characters/lines (col. 9 line 66 – col. 10 line 14 and col. 10 lines 43 – 67 and described further in the rest of embodiment 3). Ohta teaches this masking with coefficients to produce results correct and faithful to the input image data.

Ohta does not specifically teach that the image generating units include a smoothing process based on the character/line result.

Sasanuma teaches a system much like that of Ohta including inputting data, converting it to CMYK, performing image correction, driving pulses for putout and a laser driver for final output. Further Sasanuma is assigned to the same entity as Ohta, thus implying the systems can work together.

Sasanuma teaches placing smoothing filters in the system for image correction (Fig. 4 ref. nos. 4 and 5, wherein a smooth density variation is provided, also shown in Fig. 8, Figs. 13B and 15B [and their corresponding descriptions] show the smoothing done after characters and gradation have been separated).

It would have been obvious that another type of image correction that could be placed in the system of Ohta and Hirota is smoothing as taught by Sasanuma in printing devices. The motivation for doing so would have been to provide a more correct image output of

character/line areas (col. 2 lines 23-28 and further throughout Sasanuma wherein smoothing helps the final output of the image be more correct and faithful to the inputted data [which is also an object of Ohta as discussed above]).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Divine whose telephone number is 571-272-7432. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucas Divine
Examiner
Art Unit 2624

ljd

KING Y. POON
PRIMARY EXAMINER